June 16, 2017

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, District of Columbia 20554

RE: *Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37, Amendment of Part 74 of the Commission's Rules for Low Power Auxiliary Stations in the Repurposed 600 MHz Band and 600 MHz Duplex Gap, ET Docket No. 14-165; Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186; Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band, ET Docket No. 02-380; Amendment of Part 15 of the Commission's Rules for Unlicensed White Space Devices, ET Docket No. 16-56, RM-11745*

Dear Ms. Dortch,

ACT | The App Association (the App Association) writes in support of enhancing broadband connectivity for all Americans, including through the use of unused television white space spectrum (TVWS) bands. In particular, leveraging the TVWS bands will augment mobile broadband access for U.S. rural markets, helping to bridge the digital divide and facilitate greater internet of things (IoT) capabilities in the upcoming 5G ecosystem for consumers and enterprises. Robust wireless connectivity using TVWS bands will ensure the vitality of our innovative app developer community, but also the future 5G economy. Therefore, it is imperative that the Federal Communications Commission (FCC or Commission) utilize TVWS bands to help drive innovation and the ingenuity of small business tech pioneers who play a vital role in pushing the 5G ecosystem forward.

The App Association[1] is an industry organization comprised of more than 5,000 app companies and information technology firms in the mobile economy who drive the $143 billion app ecosystem.[2] The App Association advocates for an environment that inspires and rewards innovation while providing resources to help our members leverage their intellectual assets to raise capital, create jobs, and continue innovating.

[1] See ACT| The App Association, ACTONLINE.ORG (last visited June 14, 2017), http://actonline.org/about/.

[2] See Brian Scarpelli, Nick Miller, & Roya Stephens, State of the App Economy, ACT| THE APP ASSOCIATION (5th ed., Apr. 21, 2017), at http://actonline.org/2017/04/20/state-of-the-app-economy-report-outlines-growth-dynamism-of-the-app-ecosystem/.

1401 K Street NW Suite 501
Washington, DC 20005

202.331.2130 @ACTonline
ACTonline.org /actonline.org

As the Commission is aware, TVWS can cover vastly larger expanses than traditional wi-fi routers. For this reason, the FCC chose it as a proposed solution to service un-served rural areas, stating in 2010 that access to TVWS "enable[s] more powerful public [i]nternet connections…with extended range, fewer dead spots, and improved individual speeds;" and also ameliorates overly-congested wireless networks (a phenomenon typically referred to as "spectrum crunch").[3] The ever-growing need for broadband access in rural areas that have fallen out of the purview of traditional wireline and wireless radii was at the heart of the Commission's decision to open unlicensed TVWS spectrum. The economic need to bridge the broadband gap rightfully compelled the Commission to act to ensure these remote areas keep pace with the 21st century and not fall through the cracks of the digital divide.

In 2015, the Commission furthered its mission to increase connectivity to rural areas through TVWS bands when it promulgated rules opening the 600 MHz guard bands, duplex gap, and Channel 37 band.[4] Much like the rationale it maintained in its previous proceeding, the Commission was encouraged by the impressive reach TVWS technology offered to bridge the digital divide without the traditional constraints of costly wireline or wireless deployments.[5] The Commission distinguished the extraordinary capabilities TVWS bands have to "provid[e] high data throughput service to un-served or under-served areas of the country at relatively low cost."[6] The App Association agrees that TVWS technologies should serve as a cornerstone solution to promote broadband access in these far-to-reach areas by addressing two critical issues in spectrum management: access to wireless broadband for rural areas and mitigating spectrum crunch.

---

[3] *In the Matter of Unlicensed Operation in the TV Broadcast Bands, Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, ET Docket No. 04-186 & ET Docket No. 02-380, Second Memorandum Op. & Ord., 25 FCC 18661 (2010).

[4] *In the Matter of Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37, and Duplex Gap, and Channel 37 and Amendment of Part 74 of the Commission's Rules for Low Power Auxiliary Stations in the Repurposed 600 MHz Band and 600 Mhz Duplex Gap*, ET Docket No. 14-165 & GN Docket No. 12-268, Rep. & Ord., 30 FCC Rcd. 9551 (2015), https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-99A1_Rcd.pdf [TVWS R&O].

[5] *See id.* (advocating that "[t]he fixed devices that are being deployed today are typically used to provide backhaul services for Internet connectivity offered by wireless internet service providers (WISPs), schools and libraries.").

[6] TVWS R&O, para. 1.

Although the United States has made great strides in bridging the digital divide, we agree with Chairman Pai that much work remains to be done.[7] TVWS should be an essential component of the Commission's efforts in this regard. As of 2013, only 73 percent of Americans were connected to the internet in the United States,[8] claiming overall cost of broadband deployment—either wireline or wireless—a leading contributor to a lack of availability. Further surveys have demonstrated a 6 percent drop in broadband adoption in 2015.[9] Meanwhile, new and innovative IoT technologies and deployments that require robust mobile broadband connections are becoming available to improve efficiencies across consumer and enterprise use cases.[10] This divergence demonstrates the need for the Commission to take every step possible to improve access to wireless broadband.

Moreover, maintaining and opening more TVWS bands is aligned with the Chairman's goal of increasing competition in the internet service provider market. In 2014, Chairman Pai recognized the value unlicensed TVWS bands have to wireless internet service providers (WISPs)—an ecosystem he describes as "flush with innovation"—when he congratulated WISP innovators on developing "TV white space solutions that help[ed] WISPs extend their reach."[11] Furthermore, he recognized that the WISP industry relies heavily on unlicensed spectrum, some of which intend to utilize TVWS bands,[12] and even endorsed the idea of providing more unlicensed spectrum so that the FCC can assist entrepreneurs.[13] While WISPs are an excellent use case, the App Association believes that, in facilitating greater competition in the broadband marketplace, the Chairman should include focus on unleashing innovation in services that utilize unlicensed spectrum, namely the TVWS bands. Doing so will bring the benefits of TVWS to any internet service provider seeking to improve its signal coverage, as well as those on the wrong end of the digital divide.

---

[7] Ajit Pai, Chairman, FCC, Remarks at the Fed. Commc'ns Comm'n (Jan. 24, 2017), available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2017/db0124/DOC-343184A1.pdf.

[8] Caitlin Dewey, *The 60 Million Americans, Who Don't Use the Internet, in Six Charts*, THE WASHINGTON POST (Aug. 19, 2013), https://www.washingtonpost.com/news/the-switch/wp/2013/08/19/the-60-million-americans-who-dont-use-the-internet-in-six-charts/?utm_term=.f9619c034e11.

[9] PEW RESEARCH CENTER, *Three Technology Revolutions*, PEWINTERNET.ORG (last accessed June 14, 2017), http://www.pewinternet.org/three-technology-revolutions/.

[10] Lyndsey Gilpin, *White Space Broadband, 10 Communities Doing Big Projects*, TECHREPUBLIC (Mar. 19, 2014, 4:00 AM), http://www.techrepublic.com/article/white-space-broadband-10-communities-doing-big-projects/ [HEREINAFTERTECHREPUBLIC ARTICLE].

[11] Ajit Pai, Commissioner, FCC, Remarks at WISPapolooza (Oct. 15, 2014), available at https://apps.fcc.gov/edocs_public/attachmatch/DOC-329969A1.pdf [hereinafter WISPAPOLOOZA SPEECH].

[12] Joan Engebretson, *Despite Uncertainty, Wireless ISPs Plan to Use TV White Spaces*, TELECOMPETITOR.COM (May 21, 2012, 1:00PM), http://www.telecompetitor.com/despite-uncertainty-wireless-isps-plan-to-use-tv-white-spaces/; see also, Press Release, Carlson Wireless Technologies, Carlson and Neul launch first commercially available white space radio system created for WISPs (Mar. 12, 2012), at http://www.carlsonwireless.com/press-releases/carlson-neul-launch-first-commercially-available-white-space-radio-system-created-wisps/.

[13] WISPapolooza Speech, at p. 2 (stating "I believe the FCC should be on the side of entrepreneurs like WISPs, and that means in part being in favor of unlicensed spectrum.").

Lastly, providing industry more unlicensed TVWS bands assists the Chairman in one of his key policy priorities: the successful deployment of a 5G infrastructure. Chairman Pai dubbed May "infrastructure month," and announced two key notices of proposed rulemakings oriented towards deploying both wireline and wireless 5G infrastructure.[14] The App Association believes unlicensed TVWS bands play an integral role in this brave new 5G world, and hopes that the Chairman also views them as a solution to promote the building out of the infrastructure needed to support the progress and broad adoption of future IoT.

Currently, cities across the United States are also using TVWS-driven connectivity. For example, in the Chairman's home state of Kansas, Kansas City deployed its "Kansas City K-20 Libraries" initiative, which used TVWS bands to provide free wi-fi in public libraries that traditional broadband networks could not reach.[15] In West Virginia, students and faculty at West Virginia University (WVU) have wi-fi connectivity on Personal Rapid Transit platforms through a TVWS broadband project. What is most impressive is that, at WVU, 12 Mbps broadband can travel more than two miles, through one TV channel alone. In Wilmington, North Carolina, the government is using TVWS to connect two local parks and several public gardens to monitor water levels, water quality, and public lighting around the area. These are only a few examples of how TVWS are already playing into the broader 5G IoT infrastructure, and tech companies around the globe are already utilizing TVWS technologies to revolutionize a myriad diverse markets, including agriculture and healthcare.[16] More TVWS spectrum is required if we wish to see these innovations grow.

In conclusion, the App Association is committed to promoting a vibrant, inclusive, and sustainable IoT environment as we begin to move into a 5G ecosystem. Enabled by the connectivity TVWS devices provide, we are confident the small business app developer community will drive innovative technology solutions into 5G and beyond. Achieving the potential of TVWS bands will, however, require the FCC to take action in the above-noted dockets to bring their many well-documented benefits to Americans in all corners of the country.

---

[14] *In the Matter of Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure*, WT Docket No. 17-79 * 15-180 (Mar. 30, 2017), https://apps.fcc.gov/edocs_public/attachmatch/DOC-344160A1.pdf.

[15] TECHREPUBLIC ARTICLE.

[16] *E.g.*, Dynamic Spectrum Alliance, *Limited, Worldwide Commercial Deployments, Pilots, and Trials*, DYNAMIC SPECTRUM ALLIANCE (last updated Jan. 2016), at http://dynamicspectrumalliance.org/wp-content/uploads/2016/01/Pilots-and-Trials-Brochure_Jan-16.pdf.

We thank you in advance for your time and consideration on this important issue.

Sincerely,

Morgan Reed
President
ACT | The App Association